

The National Dental College.

AN ADDRESS ON

THE VALUE OF DENTAL EDUCATION

AS A MEANS TO DENTAL REFORM:

DELIVERED BY

OAKLEY COLES,

(Dean of the College),

AT THE OPENING OF

THE SUMMER SESSION,

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GENTLEMEN.

IN bidding you welcome to the National Dental College, I cannot but be impressed with a sense of the deep responsibility resting upon you, gentlemen, as students, and on my colleagues and myself as teachers.

At no other time has the position of the Dental Profession given rise to so much anxious thought on the part of our leaders; and assuredly there has never been an occasion when the subject of Dental Education was so fraught with interest, not only to the present generation, but to the future Dental Practitioners of this country. It may always be truly said of any profession, that its future depends upon the training of the recruits that enter its ranks; that simply implies that those whose duty it is to teach, should faithfully fulfil the task allotted to them; but

our own case is somewhat different. We have not only to maintain efficiency in fulfilling a given curriculum, but we have the far greater responsibility put upon us of deciding upon the extent and character of the study to be pursued. This is no easy matter, for we are addressed on the one hand by those who would fain limit our knowledge to that which they call practical; whilst others, taking an extreme view in the opposite direction, would leave Dental Education without a boundary or landmark, and in the expansiveness of their scheme, forget the object of their pursuit. Different sections of the profession holding such very antagonistic views, it is not surprising that a sufficient amount of vitality has been imported into the question to give it unusual interest; in fact, so full of interest does the subject seem to be at the present time, that I think it will well repay us if we consider, somewhat in detail, the various aspects of the question.

Lest, however, you should think that I am giving undue prominence to the educational, rather than to the political aspect of Dental Surgery, let me endeavour to justify my position by an avowal of my profound faith in the political power for good of a perfect Dental Education. Let me make this statement clearer. We are all of us painfully aware of the objectionable advertisements with which our

press is disfigured. You have probably also seen from time to time those curious specimens of our art, which are displayed in various windows and in show cases throughout the metropolis to the gaze of an ever credulous public. Now if you make the acquaintance of some of the gentlemen who adopt this method of procuring practice, you will, having recovered from the shock of their innate vulgarity, be struck by their great ignorance; plausibility will be found to take the place of skill, and a low cunning will answer the purpose of intelligence. What conclusion can we come to from this—simply that vulgarity is the invariable concomitant of ambitious ignorance. What inference may we then draw? We may, I think, fairly presume that, as we send forth fully educated, qualified Dental Surgeons, that which has been such a thorn in the flesh to us, will in the next generation have disappeared. You may naturally ask, what are the grounds on which such a hope is based. My reply is, the best of all grounds—experience; for it is a notable fact, which cannot be too widely known, that—as shown by a recently published list—out of 390 Dental Licentiates, only seven or eight were found to be advertising as defined by the laws of the Odontological Society. This, surely, is a matter for congratulation, whilst it indicates, I think with great clearness.

the direction in which we should work for reform in the future. It has often been observed that you cannot legislate for fools ; it is equally true that you must not expect to make men respectable by Act of Parliament. But though we cannot bend the tree, we may train the sapling at our pleasure. Thus as we educate our students in accordance with the requirements of a profession, so may we expect that they will in the future practise Dental Surgery in a professional spirit. Those who have adopted our specialty simply as a trade, for purely commercial purposes, will gradually die out, and their place will be taken by those who are now fulfilling their prescribed professional studies.

I believe most thoroughly that if every person calling himself, or even herself, dentist were placed in possession of the Dental Diploma to-morrow, by what is termed an act of grace, we should fail to see any improvement in the real condition of the Dental Profession. Our social status would remain precisely the same as if no such "graceful" act had taken place, whilst professional skill would obviously remain as it is. No, gentlemen, depend upon it, we must not expect any great reform to be rapid in its action or speedy in its results. But at the same time we must not despair of progress, nor think that we are not making way because we cannot appreciate the rate of movement.

Our motto for a generation at least must be : " All things work well to him who will but wait." But it must be the active waiting of self-culture, and the well-trained patience of a mind undergoing severe mental discipline—not the discontented political agitation of eager so-called reformers, nor the equally mischievous premature levelling-up of qualifications by a small group of well-intentioned enthusiasts. Intolerance of delay in arriving at the desired end is the characteristic of those who devote more of their time to grumbling than to work, and they would do well to remember the maxim of Guicciardini, " that the things of this world stand not still, rather they are always making towards that path towards which by their nature they must necessarily go ; yet they often tarry longer than thou thinkest, because we measure them according to our life, which is short, and not according to their time, which is long ; and therefore their steps be slower than our life, and so slow by their nature that though they move we often are not aware of their motions ; and for this reason the judgments which we make are often false."

Seeing then that we are thus thrown back upon slow processes to obtain permanent results, it remains for us to consider the means by which we may hope to attain our end.

A very general belief exists in the vast power of numbers, and this belief is well founded, but in order to appreciate it at its proper value, we must be prepared to limit this power both as to time and space; thus a mass meeting is useful as a political demonstration, forming a climax to a long-continued agitation, but let the numbers be kept together for a sufficiently long time, and you will soon have divisions followed by loss of interest in the subject in hand. Again, all history shows that constant appeals to the voice of the multitude, simply because of their numerical strength and collective intelligence, is wrong both in principle and practice. So, gentlemen, we shall find in our profession, it is not by a mere increase in the numbers of qualified men that we shall improve our position, but it is by an increase in the numbers of our perfectly educated men that we must look for strength. Numbers may be serviceable for a short time, and for a precise object, but it is to individual intelligence that we must look for the "unhasting, yet unresting" progress by which a science or a profession is built up.

The consideration of the question of education to which I have thus endeavoured to reduce the problem of Dental Reform is at the outset surrounded by many difficulties. The modern student is bewildered by the multitude of

subjects of which he is expected to acquire some knowledge, whilst he suffers probably still more from a confusion of ideas as to the relations between learning and education. His whole previous training up to the time of entering upon his special studies has been devoted not to education but to learning, and he enters the medical school with a mind partly like a sponge and partly like a filter—with great power of absorbing facts, some capacity for dividing the good from the bad, but with a great liability to let the pure stream of sound knowledge percolate for want of classifying and storing powers. Schoolmasters seem to forget, and boys naturally cannot know intuitively, that there are at least two well-marked divisions in education—the one in which facts, rules, and knowledge are acquired for the sake of their own intrinsic value, as in geography, grammar, and arithmetic; whilst there are other departments of study which are chiefly useful for the mental exercise that they give, and the reason and intelligence that they develop; the study of the so-called dead languages and pure mathematics being of this latter class. Boys in most cases think Greek or Latin a bore, because they are given no motive for studying it, but they will look at it in a very different light if they are led to understand that it is a means to

an end ; that it takes the place of gymnastics for the mind ; and that if they can develop their reasoning faculties over a dead language, they are preparing themselves to reason in adult life over actual and vital problems ; the mind being placed in a condition in which knowledge no longer appears as a heavy knapsack to a pedestrian, but rather as a velocipede to an athlete, on which he may mount and cover ground in the race of life that his less fortunate companion cannot hope to pass over. If it be true that the schoolboy with his limited faith in work is thus handicapped by a want of knowledge as to the motives that should stimulate him to work in certain directions, how essential is it that the Dental Student should have placed before him the principles which dictate the course of his study, for thus only is he enabled to work in intelligent co-operation with his teachers.

We are apt, in entering upon our medical student's life, to regard education as that process by which we hope to acquire sufficient knowledge to pass through the ordeal of the Examining Hall ; and the acquirement of our Diploma, as the limitation of our period of study, and the commencement of the era when we are to apply our knowledge for the benefit of others. Now all this is in a measure true ; but it is not the whole truth, nor the complete scheme.

Education properly understood is the training of the mind to observe, record, and reason in such a way that the mental capacities may be developed to the fullest extent, and kept in the highest degree of perfection and usefulness. In this manner the most abstruse sciences are made subservient to the demands of ordinary life, since they increase the power of the brain to observe new facts, to record the issue of certain events, to reason as to their results, and to learn from their effects. Now the object of education is the same in all departments of life, and the same principle governs equally literature, science and art.

It is clear that, the aim of education being thus broad, some guide or compass must be created by which we may limit its application within reasonable bounds. For this end it has been deemed well to accept utility as the guide by which we must travel, and as the beacon to which we must steer. Do not misunderstand this much abused word. I do not mean by utility that standard of excellence which is represented by a money value, nor that measure of capacity which can be bought and sold; I mean rather that higher and nobler signification of the word which is embodied in the life of the man who does the greatest good to the largest numbers—and who realizes that the great aim of life is to ennoble himself and to glorify his Creator by fulfilling

every duty, and contributing to the happiness and progress of his fellow-creatures. This is the meaning I would give to the word utility, and the education that is guided by such a motive and limited to such issues can hardly be unproductive of good.

Now it may be concluded that, although the principle of education is alike in all cases, the method by which it shall be applied will necessarily vary according to circumstances. Thus, the spirit of the Student of Poetry will be totally different from the spirit of the Student of Chemistry, and the methods by which the one acquires facts and the other obtains food for the imaginative faculties will be totally distinct. We ourselves have above all things to cultivate what has been so well described as the scientific method. By this I mean the fuller and more perfect exercise of those faculties that were developed in early life by the study of language and mathematics. History, as it is usually taught, simply implies in the learner the possession of a good memory and a blind faith. Not so with mathematics; the simplest problem, *e.g.*, that any two sides of a triangle are greater than the third side, calls forth the great essentials of the scientific method in learning. First, the Student must realize the proposition made, and at the first glance he will probably doubt the accuracy of the statement. This

will naturally lead him to enquire into the truth or error of that which is placed before him, and which he is assured is true. Doubt leading to patient enquiry works a perfect mastery of all the facts of the case, a careful estimate of the reasons for and against the statement made, and finally a just conclusion arrived at by the application of accurate observation, careful analysis, sound reasoning, and in the end unquestioning adherence to the logic of facts. Now at the period of life when such a problem as that which I have brought forward is first considered, the natural thought is that there has been an infinite waste of time, energy, and thought about three unequal straight lines. But apply the same processes of thought with the same strictness to any problem in physical science, and see what power you bring to bear upon the process of its solution. There is not simply the advantage that you gain from the various processes of thought, but there is the still greater aid that you receive by applying those processes in proper sequence.

Half the trouble that we meet with in the study of any science arises not so much from any difficulty in the subject itself as from the difficulties we create for ourselves by reasoning about facts with which we are only partially acquainted, or by coming to a conclusion without duly

estimating all the points for observation and thought. Now it is in this way, and for the reasons I have given you, that the study of what many call useless learning becomes subservient and essential to real education ; for you must not overlook the fact that if you investigate the problems of a science in this way you will be imperceptibly training yourself for every department of life and art, and you will inevitably acquire the grand essential of all sound progress, the power of observing accurately, recording faithfully, and reasoning correctly.

Being impressed with the process by which all knowledge should be acquired, and guided in your aim by the utility which you have always before you as the end in view, you will understand with a more perfect comprehension the value of the studies that are arranged for you in your curriculum. Yet I would warn you against any strict margin to your studies. In every department of science, art, and literature, carry with you the observing and receptive faculties ; but whether you note much or little, I beg of you to cultivate accuracy. A general knowledge of any subject (as J. Stuart Mill has pointed out) is always useful, if by a general knowledge you understand a thorough mastery of that which you have observed, and not merely a superficial acquaintance with the matter. By this

means, and by this means only, can you make your necessary store of knowledge available for all the purposes of life; for assuredly there is no more mischievous and unfortunate man than he who knows many things superficially, but nothing with accuracy or precision.

I said a little while back that it was impossible to legislate for fools. I must modify that statement; it is not only possible, but it has hitherto been deemed essential, the Medical Acts of this country being my witnesses. These Acts are essentially for those who are not able to judge for themselves; they are for the guidance of the feeble-minded, the credulous, and the ignorant; in fact for that large class of which Carlyle considers the population of the world is chiefly made up. For the protection and guidance of those to whom I need not any more refer by name, the Medical Acts have empowered the various Corporations to examine candidates and grant diplomas. As human nature is constituted these Examinations and Diplomas are of very great value. They offer a guarantee to the public that the pure Surgeon, or the Dental Surgeon has acquired a certain amount of knowledge, and that he possesses a sufficient degree of skill to practice his profession with benefit rather than injury to the public. This is the most vital principle in the scheme of Medical Examina-

tions. It provides a recognisable standard of competency for those who are not able to measure for themselves. We see at once, I think, in this way the value, convenience, and expediency of legal qualifications. It is not that a man is any more competent because he has passed this or that College or University—it is rather that by a certain process he has obtained the Hall Mark of legal recognition, by which others may identify him as one possessing certain qualities and capabilities. My object in thus placing the subject before you is that you may realize all examinations as incidents in your educational career, and not as finalities to that career; whilst I would strongly urge you, for the very reasons I have adduced, to take the highest degree that is within your reach, as a clear proof to your *confrères* of the progress you are making. In this spirit alone will they be really useful—by being made subservient to the greater scheme of ultimate utility.

It has often been observed of certain men that they are very good writers and speakers, but very bad operators, and in many instances this is notably the case. Why is it? Simply because whilst the purely intellectual faculties have been fully developed, the senses have remained untrained. To persons so constituted the senses have been used simply like an ordinary telegraph—transmitting living sensations,

yet not themselves instinct with life; acting mechanically, but not vitally. With the well-trained sense we have a process that may be compared to the telephone—a medium vibrating with every musical sound, thrilling with the impressions it receives, living almost by the simple function that it supplies

Or again the difference between the educated and the uneducated sense may be likened to a message that is sent by letter, and one that is taken by an intelligent human being. How well we know the way in which a mistaken impression is at once corrected, if the messenger delivers the message rather than carries a note; and so with seeing, hearing, smelling, taste and touch, they may be made the simple media for *carrying* a message to the nervous centre, or they may be educated into living messengers, full of the impressions they have to convey, giving every detail, and shade of colour, sound and texture—part of our very souls rather than mere letter carriers to our brain.

It will be readily seen, I think, that of all men requiring a perfect education of the senses as well as of the intellect, the Dental Surgeon stands pre-eminently foremost. Properly guided and controlled there is not a single sense that may not be made useful in the daily practice of his profession. Let me give you some examples in which education

is manifestly requisite. How important, yet how difficult it is to distinguish between the discolouration of a tooth due to necrosis, and that form of discolouration which is due simply to spontaneous death of the pulp. Then, again, how valuable for diagnostic purposes it is to be able to define whether the offensive odour of wool that has been placed in the pulp chamber is due to decomposed food, or to a suppurating dental nerve. The ordinary exercise of the sense of smell would tell you that the wool was offensive, but only the educated sense would enable you to tell the difference between the two. And so I might go on to quote examples illustrative of the value of training in regard to the rest of the senses.

Let me rather pass, however, to a consideration of the means by which we may educate these faculties.

The training of the hand will be best accomplished, first, by fencing (with foils, not singlesticks), so as to give strength to the wrist and forearm, quickness of sight, rapidity of movement, and sensitiveness of touch; whilst incidentally it will give an easy carriage and free movement to the limbs. For the more complete and delicate education of the hand, however, you should learn to carve in wood and ivory, or to engrave. Here, you observe, the arm is kept nearly at rest, whilst all movement takes place

in the hand and wrist. Such work as engraving on wood or carving in ivory is especially useful, since great strength and force, combined with extreme delicacy, are required, yet the graver or sculptor must be kept well in hand and under complete control. One of the lightest handed and gentlest operators I have ever seen, is a gentleman whose carved bone and ivory work would be a curiosity to modern dental students.

The eye should be educated to an appreciation of form and colour by modelling in clay, working in marble, and studying the works of our best artists with some regard to the influence of combinations and contrasts of colour. Still further may the study be carried, if opportunity avails, by a careful examination and reproduction, if possible, of some of the exquisite work in metal of the Renaissance period.

Do you think, gentlemen, I am opening out too wide a field for your labours, too diffuse a system for your guidance? Let me show you then, how training tells. Instead of putting into the mouth a smooth gold plate that is expected to fit a well marked corrugated palate, you will labour till you produce a piece of repoussé work, that even Benvenuto Cellini need not have been ashamed of. Even that most inartistic of materials, vulcanite, moulded by the mas-

ter hand, will assume a symmetry of form that will compensate for inferiority of substance. Artificial teeth will be chosen with so much regard to form, colour, and texture, that you shall fulfil the dictum that the height of art is to conceal art, and produce such combination of glaze and body as Palissy never dreamt of. So shall you idealize your labours, that in the laboratory you will be no longer the workman, but the artist, producing that of which you may be well proud; competent to carry out mechanical, truly, yet æsthetical details, of which the highest votary of art need have no shame.

Yet I would not have you mere mechanics, though you possess the highest skill in that department. Your surgical and scientific training must keep pace with your manipulative progress; they are each a part, and together will make you a perfect Dental Surgeon. When you have shown competency in both you may if you please practise either, according to your inclination and capabilities: bearing in mind that you may become as eminent in the practice of Dental mechanics, pure and simple, as in the practice of Dental Surgery, in the same way that one surgeon may elect to pay special attention to the treatment of deformities of the limbs, whilst another chooses to practise ophthalmology. It is not that one is in any sense

inferior to the other, but that each man has followed the bent of his inclinations.

Let me, however, reduce all that I have said to some concrete form. Your ambition is primarily to be good Dental Surgeons, and with this object in view you cannot do better than fulfil faithfully in every detail the curriculum that has been prepared for you by the College of Surgeons. Whether in your own case it be compulsory or not, I would earnestly advise you all to pass the preliminary examination in arts required of Dental Students after the month of October in this year. By this means you will be qualifying for the full membership of the college, at the same time that you are preparing for the Dental examination. And to every one who can accomplish it I would say, make yourselves possessors of the general qualification, in addition to the special one.

I do not say, for I do not believe, that it will make you better dentists; but it will make you better educated men, since it compels a wider field of study and a more strenuous mental effort, and with this object I desire that you may be members—in fact, to sum up the matter in a few words, the possession of the Dental Diploma is essential, but to have the Surgical Diploma also is expedient.

If the Dental Licentiates are left alone, they possess suffi-

cient ambition to raise themselves to the standard of other professional men, either by extending the curriculum of the College, or by raising the examinational test; but three or four hundred intelligent men will not be driven, though they may be drawn, and a sudden attempt to alter the value and lower the esteem in which the Dental Diploma is held, can only end in disaster, if not defeat. To dishearten those who are working for Dental Reform by educating others up to an appreciation of the value of an uniform standard, is certainly retrogressive progress; for as surely as you must have a platform before you can take a long jump, so surely must you have the two thousand dentists in this kingdom impressed with the value of the Dental Diploma ere you can make them think of the necessity for any other and more general degree.

It is worthy of consideration that in reviewing the aspect of Dental Education throughout the world, we find in those countries where there is restrictive legislation, as in Belgium, Germany, Austria, Hungary and Denmark, the competency of the Dentists educated in the country is at a very low ebb; whilst in England and America, where great educational facilities are to be found, and restrictive legislation can scarcely be said to exist, we find the highest degree of competency.

I have departed somewhat from my theme in order to justify, on the grounds of necessity and expediency, a line of conduct that at first might appear antagonistic to the principles I have endeavoured to lay before you.

I did not come here, however, to plead for the Dental Diploma, but for dental education, and it is only in so far as that qualification helps on the work of progressive development in our profession, that I deem it of value or worthy of regard; as soon as it becomes simply the cry of a political party and the point of attack of those who differ from us, it must sink in the esteem of the well-wishers of Dental Surgery.

One word more, gentlemen, and I have done. It has been usual on occasions such as the present to conclude by addressing a short moral essay to those who have honoured the lecturer by their attendance. I do not feel called upon

to take to myself the function of the preacher, or the duty of the homilist; still it is a matter to which I must refer, more especially as guides for professional conduct and codes of Dental ethics have been thought of and discussed. I have read many guides, and studied various codes, but after all I have found no better guide than a good conscience—no higher code than the Sermon on the Mount.



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